

---

**Underground Fuel Storage Tank Leakage Repair Journal**

A Practical Guide for Petrol Stations & Depots in Coastal Nigeria

---

**Focus Area:**

Non-Intrusive Repairs Using Hydroseal Application & Stratification Method  
Region: Warri, Delta State & Coastal Nigeria

---

**Office Address:**

NNPC Service Management Building,  
NNPC Housing Complex, Ekpan, Uvwie,  
Warri, Delta State

Phone: 08143449981

Email: [info@chesstgroup.com.ng](mailto:info@chesstgroup.com.ng)

Website: [chesstgroup.com.ng](http://chesstgroup.com.ng)

---

**“Preserving Underground Infrastructure without Excavation.”**

---

**Edition: July 2025**

**Published by: Tom Chess T Group of Companies Ltd**

---

## Executive Group Chairman's Editorial

*By Thompson Douglas, Executive Group Chairman, Tom Chess T Group of Companies Ltd*

The integrity of underground fuel storage systems is fundamental to the sustainability and profitability of petroleum businesses — especially in Nigeria's coastal regions, where environmental conditions often accelerate tank degradation. For years, filling station owners and depot managers in cities like Warri have faced the hard reality of fuel loss, regulatory pressure, and the high cost of excavation-based repairs.

At Tom Chess T Group of Companies Limited, we decided to challenge this norm.

This journal represents more than a technical showcase — it is a declaration of our commitment to innovation, sustainability, and client-cantered solutions. Through the deployment of our non-intrusive Hydroseal and Stratification Method, we have redefined what is possible in underground tank rehabilitation. We offer not just repairs, but peace of mind, allowing our clients to focus on running their businesses without the fear of system failure or environmental penalties.

As a company deeply rooted in Nigerian soil — with an operational base in Warri — we understand the terrain, the challenges, and the urgency. That's why our solutions are field-tested, regulator-compliant, and time-sensitive. Our goal is simple: to protect your infrastructure, your product, and your profit.

I am proud of the work our team has done and continues to do across Warri and coastal Nigeria. This journal captures that story — of commitment, of capability, and of innovation that meets our environment where it is.

We look forward to partnering with more forward-thinking clients as we set a new standard in underground storage tank repair.

For: **TOM CHESS T GROUP OF COMPANIES LIMITED**



**AUC. THOMPSON O.S. DOUGLAS** FIMC, ARPM, MCPN, MNCS, MCAI, MISPO, MITAN,  
Executive Group Chairman/CEO

---

## 1. Introduction & Context

### 1.1 Company Overview: Tom Chess T Group of Companies Limited

Founded in 2010, Tom Chess T Group has quickly become a leading specialist in non-intrusive underground tank repair across Nigeria. Focusing on high-performance Hydroseal application and controlled tank stratification, the company repairs petrol and diesel storage tanks without excavation - preserving existing infrastructure, minimizing downtime, and ensuring environmental compliance.

Scope of Services:

- Leak plugging using advanced Hydroseal polymer-based compound
- Full internal stratification to restore pressure stability
- Serving both diesel and petrol USTs at stations and depots
- Excavation-free approach, reserving replacement only for extreme failures

Repair Process includes:

1. Inspection and leak assessment
  2. Safety degassing and confined-space entry
  3. Hydroseal injection and stratification
  4. Hydrostatic testing and client certification
- 

### 1.2 Relevance to Warri & Coastal Delta Region

Warri, located in Delta State, is characterized by high water tables, flat topography, and coastal clay soils - conditions that exacerbate underground tank leakage and subsurface contamination. UST systems here frequently experience:

- A. Corrosion-driven leaks in older tanks (>15–20 years), leading to hydrocarbon infiltration
- B. Rapid migration of contaminants into groundwater - making boreholes unsafe even with minimal leak rates
- C. Frequent illegal bunkering and pipeline vandalism, heightening both leak risk and site instability

These factors make Warri particularly vulnerable, underscoring the need for specialized, non-invasive repair methods like hydrophobic sealant systems and structural stratification.

---

### 1.3 Environmental & Regulatory Drivers

Numerous studies confirm that underground leaks in coastal Delta communities catalyse substantial environmental degradation and public health risks. Contaminants such as BTEX and PAHs leach into shallow aquifers, threatening potable water sources often used by Warri residents.

Regulatory scrutiny is increasing: Delta's NMDPRA is actively inspecting and sealing non-compliant filling stations due to safety and licensing violations. As a result, there's growing demand for tank operators to proactively demonstrate environmental stewardship and operational reliability.

#### 1.4 Strategic Fit: Why Hydroseal & Stratification

- A. High-water table adaptation: Hydroseal expands to match pressure conditions in waterlogged soils, making it ideal for coastal zones.
  - B. Structural reinforcement: Stratification realigns internal stresses in aging tanks, crucial where external soil and hydrostatic forces are extreme.
  - C. Non-intrusive benefit: Avoiding excavation reduces downtime, cost, and community disruption—key for clients in densely developed Warri zones.
  - D. Regulatory alignment: This methodology enables operators to maintain compliant infrastructure, reduce leak liability, and support community safety.
- 

#### 1.5 Objectives of this Journal

- 1. Educate petrol station owners and oil marketers on local leakage challenges
  - 2. Illustrate Tom Chess T's proprietary repair methods in action
  - 3. Build confidence through evidence-backed strategies and environmental accountability
-

## Section 2: **Leakage Challenges in Coastal Warri**

Underground fuel tank leakage is a significant and growing concern in Warri and the broader Delta State region, driven by a combination of environmental, structural, and operational factors. For businesses operating petrol and diesel underground storage tanks (USTs), these challenges are not only technical—they pose serious financial, environmental, and regulatory risks.

At Tom Chess T Group of Companies, we've encountered several real-life cases, including one along the Ughelli–Patani Expressway, where a steel tank, over 15 years in service, developed progressive leakage. The surrounding soil was waterlogged year-round, with no proper drainage, and the tank—partially submerged due to high groundwater levels—exhibited corrosion along the base and seam lines. This case is not unique; rather, it reflects the widespread nature of UST degradation across the coastal terrain of Warri.

---

### Common Issues Identified by Clients

Clients frequently raise the following concerns:

- “Water is seeping into my tank.”
- “My fuel quality is compromised.”
- “I’m losing product daily but can’t shut down.”
- “Excavation is impossible due to soft, wet soil.”

In these situations, operators often notice:

- Strong fuel odour around tank areas
- Water-contaminated fuel at dispensers
- Sudden drop in tank levels with no visible spillage
- Fuel foaming or discoloration

These signs usually point to water intrusion, pressure loss, or corroded tank bottoms—all aggravated by Warri’s harsh subsurface conditions.

---

### Soil and Groundwater Conditions in Warri

The coastal geology of Warri is uniquely challenging:

- High water table — groundwater lies close to the surface year-round
- Soft clay and poorly drained soil — ideal for corrosion and tank shifting
- Saltwater intrusion — increases chloride levels, accelerating metal decay
- Frequent flooding — tanks remain submerged for extended periods

These conditions lead to external corrosion, weakening joints and accelerating the formation of microscopic cracks in older steel tanks.

---

## Age and Material of Underground Tanks

From our assessments:

- Most tanks in Warri are steel tanks installed over 15 years ago
  - These are beyond optimal service life (typically 15–20 years)
  - Lack of protective coatings or cathodic protection systems increases vulnerability
- 

## Operational and Financial Impact

Tank leakage isn't just a technical failure—it affects the entire business chain:

- Product loss leads to direct revenue losses
- Clients spend more on unnecessary refills
- Contaminated fuel results in customer complaints or product recalls
- Risk of non-compliance penalties from NMDPRA inspectors
- Potential environmental fines for groundwater contamination

For many stations, especially in urban Warri, space constraints and soft ground conditions make excavation impractical, forcing operators to defer maintenance—and worsen the problem.

---

## Environmental & Public Health Concerns

- Even minor UST leaks can pollute millions of litres of groundwater
- Harmful substances like benzene, toluene, and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs) enter the water table
- These pollutants affect hand-dug wells and boreholes relied on by nearby communities
- Prolonged exposure can lead to cancer, liver damage, and reproductive issues among affected populations

Warri's flat terrain makes natural containment nearly impossible, allowing underground leaks to migrate fast and wide through the soil.

---

## Root Causes of Leakage in Coastal Warri

- External corrosion due to chloride-rich, water-saturated soil
  - Tank uplift or movement caused by high hydrostatic pressure
  - Aging infrastructure with no modern protective measures
  - Neglect and limited access to proper diagnostics and repairs
- 

## Why This Matters

For every petrol station or depot in Warri operating an underground tank, these leakage challenges can result in:

- Long-term financial losses
- Reputation damage with customers
- NMDPRA enforcement actions
- Legal liability for environmental harm
- Community health threats

This makes it imperative to adopt solutions that work with—not against—the soil and water realities of coastal environments.

---

In the next section of this journal, we will introduce how Tom Chess T Group's proprietary repair techniques, including Hydroseal application and internal tank stratification, offer a powerful and cost-effective response to these challenges—without requiring tank excavation or replacement.

---

### Section 3: **Hydroseal & Stratification — the Coastal Solution**

In the challenging subsurface environments of coastal regions like Warri, traditional repair techniques for underground storage tanks (USTs) often fall short. The combination of waterlogged soil, high hydrostatic pressure, and corrosion-prone conditions requires more than surface-level solutions. At Tom Chess T Group of Companies Limited, we deploy a refined system of Hydroseal application and internal tank stratification — an integrated repair solution tailored for performance, durability, and minimal disruption.

---

#### Hydroseal: The Barrier Technology

At the heart of our repair approach is the application of Hydroseal, a high-performance sealing compound designed to address active and passive leaks in underground fuel storage systems. While the proprietary formulation we use remains discreet, its core function is both reactive and protective:

- Expands within microfractures under pressure
- Resistant to hydrocarbons, chemicals, and moisture intrusion
- Maintains elasticity, allowing it to adjust to shifts in pressure and thermal expansion
- Non-reactive with fuel, ensuring product purity and pump performance

Hydroseal is applied internally, directly to identified leak zones - typically along seam lines, weak joints, and corroded patches. In most cases, this is carried out during confined entry operations, following complete degassing and ventilation of the tank. Our team ensures a controlled application that adapts to the shape and flow of the damaged surface, without the need for excavation or tank displacement.

This method has proven especially useful in high water table conditions, where sealing compounds must maintain integrity even when tanks are partially submerged from the outside.

---

#### Tank Stratification: Structural Reinforcement from Within

Stratification, as practiced by Tom Chess T Group, refers to a methodical internal reinforcement process aimed at restoring pressure balance and structural uniformity across the tank's interior surfaces. Though the details of our stratification matrix remain internal, the process generally addresses key stress areas such as the tank floor, cylindrical walls, and dome section - zones most vulnerable to distortion, corrosion, and eventual leaks.

In coastal environments, stratification serves a critical role in combating:

- Hydrostatic imbalance, which can distort tank geometry over time
- Pressure hotspots that occur due to underground fluid forces
- Material fatigue, especially in tanks that have exceeded their typical design lifespan

By reinforcing the tank from within, we extend its operational reliability, prevent future failures, and bring it back to full pressure functionality — a key benefit appreciated by operators needing immediate recommissioning.

---

## What Sets Our Process Apart

What distinguishes our method is not just the materials we use, but the way they're applied. Our approach combines:

- Non-intrusive methodology, preserving surrounding infrastructure
- Rapid deployment — most repairs are completed within days
- Minimal downtime — no excavation or tank replacement needed
- Real-time diagnostics, including leak point pressure testing
- Strict safety compliance, including degassing and gas-free protocols
- Final inspection results are certified and can be verified by NMDPRA or third-party assessors.

Our process is inspired by international best practices, but has been fine-tuned for Nigerian environmental and operational realities, particularly in swampy and coastal terrains.

---

## Post-Repair Results & Client Feedback

While tank lifespan extensions vary depending on prior damage, the majority of our clients report full restoration of dispensing operations, elimination of fuel seepage, and a noticeable improvement in tank performance. Several operators in the Warri area have expressed confidence in the durability and cleanliness of their tank system post-repair, with many citing significant savings from reduced fuel losses and avoiding complete tank replacement.

---

## A Forward-Looking, Coastal-Smart Solution

In regions like Warri where soil conditions are aggressive and maintenance options are limited, Hydroseal and stratification offer a safe, tested, and sustainable way forward. They mitigate the core vulnerabilities associated with underground tanking in water-pressured zones - without the cost or disruption of excavation.

For fuel station owners, marketers, and depot operators, this method not only protects investments - it aligns with modern expectations of environmental stewardship, regulatory compliance, and engineering efficiency.

---

## Section 4: **Safety, Standards & Regulatory Compliance**

At Tom Chess T Group of Companies Limited, safety is not an afterthought — it is built into the core of every underground tank repair we perform. Working in high-risk environments like underground petroleum storage systems, particularly in waterlogged and densely populated areas like Warri, demands more than technical skill — it demands full compliance with national safety regulations, industry best practices, and environmental stewardship.

---

### Committed to Full Regulatory Compliance

Our operations are aligned with the requirements of key national bodies, ensuring that every project we deliver meets or exceeds industry expectations:

- Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA)
- Federal Fire Service (FFS)
- Federal environmental safety agencies

Where required, we coordinate with these agencies throughout the repair process — from inspection and hazard assessment to safe recommissioning.

---

### Safety-First Technicians

Our technicians are trained and certified in confined space entry, tank cleaning, and fuel-handling safety protocols. Before any intervention begins, we carry out:

- Comprehensive site hazard assessments
- Degassing and full ventilation of the tank interior
- Use of PPE, including SCBA systems, full-body protective suits, safety harnesses, and communication gear

Each repair operation is guided by a detailed Job Safety Analysis (JSA), tailored to the site's conditions and tank specifications.

---

### Internal Oversight and Best Practices

To maintain high operational standards:

- We conduct regular safety training sessions and toolbox talks across our technical teams
- Our compliance processes are reviewed frequently to align with evolving regulations
- All safety protocols are documented, and test results are recorded and signed off for internal and client assurance

While certain external inspections are conducted on a case-by-case basis, our team ensures that all repair outcomes are certified leak-free before the tank is returned to service.

---

## Certifications & Affiliations

To reinforce our credibility and commitment to excellence, Tom Chess T Group holds the following:

- ISO 14001:2015 Environmental Management Certification: Reflecting our dedication to responsible environmental practices in fuel tank repair and containment
- Active membership in the Institute of Safety Professionals of Nigeria (ISPON): Supporting our alignment with national safety development and ethical standards

Our operational practices are continually benchmarked against global safety frameworks, adapted to the local realities of coastal Nigeria.

---

## The Result: Safer Systems, Peace of Mind

When a client engages us, they are not just hiring a contractor — they are partnering with a safety-conscious, standards-compliant team that values long-term reliability over shortcuts. In volatile environments like underground fuel tanks, safety is the most important service we deliver.

---

## Section 5: **Why Our Method Works — Business & Technical Advantages**

When underground fuel tanks fail — especially in water-saturated environments like Warri — the consequences can be swift and severe: fuel loss, environmental risk, costly downtime, and regulatory pressure. But replacing an entire tank system is both capital-intensive and operationally disruptive.

At Tom Chess T Group of Companies Limited, we offer an alternative that's smarter, faster, and more sustainable. Our integrated use of Hydroseal and internal tank stratification offers a modern solution that addresses the problem at its root — without digging up your entire forecourt.

---

### Significant Cost Savings

- Our method is far more affordable than full tank replacement, which typically involves excavation, equipment rental, downtime, and civil works.
  - By sealing leaks from within, we preserve existing infrastructure, reducing client capital outlay by as much as 60–70% in some cases.
- 

### Minimal Downtime & Business Disruption

- Most repair jobs are completed within days, allowing stations to return to dispensing operations swiftly.
  - Since our technique is non-intrusive, there's no need to dig up your premises, close multiple lanes, or delay fuel deliveries.
- 

### Environmentally Safer Method

- Our sealed application process prevents external spillage and contains internal contamination.
  - With no excavation, there's no soil disruption, no vapour release, and zero impact on nearby drainage systems or boreholes.
  - Our adherence to ISO 14001:2015 environmental protocols reinforces our commitment to eco-safe engineering.
- 

### Durable & Reliable Results

- Once repairs are completed, clients regain full tank pressure, enabling normal operations without compromise.
  - The Hydroseal compound continues to adapt to pressure fluctuations and fuel exposure, offering long-term resilience against corrosion and micro-leaks.
-

## What Clients Value Most

We've consistently found that clients prioritize:

- Quick turnaround to limit fuel sales disruption
- Zero excavation to avoid structural damage
- Fuel retention, especially where water infiltration was causing measurable losses

Our system delivers on all three — offering a complete, field-tested solution engineered for Nigeria's coastal fuel stations.

---

## Competitive Pricing Advantage

Compared to full tank replacement or traditional excavation-based repairs, our pricing model offers:

- Flexible billing, scaled to the scope of work
  - Better ROI due to reduced business interruption
  - A focus on value retention for the station owner
- 

## Quiet Confidence, Trusted Service

Though we let our work speak for itself, we continue to grow through a strong reputation and are confident in the value we deliver. Our clients appreciate the discreet efficiency of our approach and the professionalism of our field technicians.

---

## The Tom Chess T Advantage:

While other service providers may offer surface-level solutions, we go deeper — both literally and technically. Our method aligns with the realities of high-water-table regions like Warri and offers a business-first repair model that protects your product, your premises, and your peace of mind.

---

## Section 6: **Our Commitment to Warri and Coastal Nigeria**

At Tom Chess T Group of Companies Limited, we don't just work in Warri — we are present, invested, and growing with the region. With our service office strategically located at the NNPC Service Management Building, Ekpan, we're not outsiders offering distant solutions; we're on ground, equipped, and actively delivering results where they matter most.

---

### Locally Based, Nationally Recognized

Our base in Uvwie, Warri positions us at the heart of Delta State's downstream petroleum activity. From this operational hub, we support a dedicated team of in-house technicians who have experience with the specific demands of coastal tank infrastructure. This hands-on presence allows us to respond quickly, work efficiently, and deliver consistent results across Warri and its surrounding towns — including Effurun, Sapele, Ughelli, and beyond.

---

### Growing With the Region

Warri and its neighbouring towns continue to be central to Nigeria's petroleum movement — but they also face recurring challenges such as tank leakages, water intrusion, and environmental strain. Our vision is to become the preferred solution provider for all underground storage tank (UST) repair needs in these sensitive regions.

By scaling our services and enhancing local access to our non-intrusive repair systems, we aim to:

- Prevent catastrophic fuel losses
  - Reduce environmental risk
  - Protect underground assets from early failure
- 

### Local Engagement with Practical Impact

While we operate with our own core team of technicians, we engage local professionals when specialized support is required, ensuring our projects reflect both technical integrity and community alignment. We also maintain strong working relationships with stakeholders who understand the terrain, logistics, and service dynamics of the Delta region.

Our methods are shaped not just by global best practices, but by the realities of the Warri environment, where fluctuating groundwater levels, soft soil layers, and infrastructural sensitivities demand tailored solutions.

---

### A Message to Our Clients in Warri

We understand that in coastal towns like Warri, the risks are different — and so the solutions must be. At Tom Chess T Group, we combine:

- Speed (repairs completed in days)

- Safety (full compliance with NMDPRA and safety protocols)
- Cost-efficiency (non-invasive, no replacement needed)

Our promise is simple: we help you protect your investment without shutting down your business.

---

### Looking Ahead

As we continue to expand our reach across coastal Nigeria, our commitment remains firm — to provide technically sound, environmentally safe, and operationally viable tank repair services that meet the specific needs of Warri's fuel distribution ecosystem.

Whether you're a station owner, depot manager, or oil marketing executive, you can count on Tom Chess T Group to deliver value that's as dependable as your business deserves.

---

## Section 7: **Final Thoughts & How to Get Started**

At Tom Chess T Group of Companies Limited, we understand the urgent and sensitive nature of underground tank leakages — especially in vulnerable, water-logged environments like Warri and its neighbouring coastal towns. That's why we've developed a non-intrusive, pressure-balanced, and environmentally sound repair system that works where others fail.

Our strategy combines:

- Hydroseal technology for durable, leak-proof sealing
- Stratification techniques to restore internal tank integrity
- Strict safety and regulatory protocols aligned with NMDPRA standards
- Fast turnaround times without excavation or operational shutdown

From petrol stations on the Ughelli–Patani Expressway to depots in the heart of Warri, our approach continues to save operators time, product, and infrastructure — all while staying fully compliant and environmentally responsible.

---

### Let's Help You Protect Your Tanks — Without Digging

If you're experiencing fuel losses, suspect underground seepage, or simply want to prevent future issues, our team is ready to help. We carry out on-site assessments, provide custom repair proposals, and deploy quickly.

Office Address:

NNPC Service Management Building,  
NNPC Housing Complex, Ekpan, Uvwie,  
Warri, Delta State, Nigeria

Phone: 08143449981

Email: [info@chesstgroup.com.ng](mailto:info@chesstgroup.com.ng)

---

### **Request a Professional Tank Assessment Today**

No excavation. No extended shutdown. Just results.

Tom Chess T Group of Companies Ltd — Protecting Your Storage. Preserving Your Business.

---